

## REMARK

Applicant respectfully requests reconsideration of this application as amended. No claims have been added. Claims 1 and 20 have been amended, and claims 35 and 36 have been cancelled. Therefore, claims 1, 20, 30, and 34 are now presented for examination.

### U.S.C. §112 Rejections

#### Miyajima-2843 in view of Miyajima-483

The Examiner rejected claims 1, 33, 35 and 36 under 35 U.S.C. §103(a) as being unpatenable over Miyajima (6,187,243 herein after called "Mi-243") in view of Miyajima (6,048,483 herein after called Mi-483).

Neither Miyajima-243 nor Miyajima-483 teaches or discloses, at the least, injecting resin into a runner section to fill the mold cavity, where the runner's upper surface includes the release film coated on the upper inner surface of the mold, and the runner's lower surface includes the lower inner surface of the mold.

In Miyajima-243 and Miyajima-483, resin is injected into the cavity through a gate 238, where the gate 238 is connected to one corner of the cavity recess, and a resin from the pot 250 is injected into the cavity from the corner of the cavity recess. (See Miyajima-243 FIG. 6 and column 7, lines 42-44; and Miyajima-483 FIG. 6 and column 9 lines 35-38.)

In Miyajima-243, the gate is formed from the upper die (column 15, lines 53-55, FIG. 19), as opposed to the lower die as shown in FIG. 6. Furthermore, the gate's upper portion includes the surface of the die, rather than the release film 28b used to coat the surface, and its bottom portion does not include the lower inner surface of the bottom die 20b.

In Miyajima-483, the gate is a component that is connected to the side of the cavity recess (column 6, lines 61-62), and disposed on the fixed mold portion of the mold (column 7, lines 39-42). These descriptions both suggest that the gate is itself a separate component. This is further illustrated in FIG. 6, where the gate pieces are shown to be adjacent to the release film coated onto the moldings. Thus, the gate cannot have as its upper inner surface the release film that is coated on the upper inner surface of the mold, and as its lower inner surface the lower inner surface of the mold.

Neither reference shows resin being injected between a runner in which its upper surface is the release film coated on the upper inner surface of the mold, and the runner's lower surface includes the lower inner surface of the mold.

Furthermore, Chia does not disclose injecting resin into a runner section to fill the mold cavity, where the runner's upper surface includes the release film coated on the upper inner surface of the mold, and the runner's lower surface includes the lower inner surface of the mold. In Chia, resin is injected into an opening of a first mold section, rather than an opening formed between a first

mold section and second mold section as required by the Applicants' invention as recited by the claims. See FIG. 1 and column 3 lines 60-62.

### **Conclusion**

Applicants respectfully submit that the objection and rejections have been overcome by the Amendment and Remark, and that the claims as amended are now in condition for allowance. Accordingly, Applicants respectfully request the objection and rejections be withdrawn and the claims as amended be allowed.

### **Invitation for a Telephone Interview**

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

### **Request for an Extension of Time**

The Applicants respectfully petition for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

### **Charge our Deposit Account**

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: February 6, 2003



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## Version With Markings To Show Changes Made

1. (Three Times Amended) A method comprising:

placing an incomplete chip package into a mold formed by a first portion and a second portion, the incomplete chip package comprising a chip and a substrate electrically coupled using a flip chip process, the mold having a lower inner surface, and an upper inner surface, the upper inner surface being [which is] coated with release film, and the chip having (i) a top surface facing the substrate, (ii) a bottom surface opposite the top surface, the bottom surface butting against the upper inner surface, and (iii) one or more side surfaces between the top and bottom surfaces;

injecting a liquid resin into a runner section of the mold, the runner's upper surface including the release film disposed on the upper inner surface of the mold, and the runner's lower surface including the lower inner surface of the mold [runner formed by mating the first portion with the second portion], and the resin encapsulating a significant portion of the one or more side surfaces, and filling a first gap between the top surface and the adjacent substrate; and

curing the resin.

20. (Three Times Amended) A method comprising:

placing an incomplete flip chip package into a bottom inner cavity of a bottom mold portion, the incomplete flip chip package comprising a chip and a substrate, the chip having a top surface coupled by reflowed solder bumps to an upper surface of the substrate, the chip further comprising a bottom surface opposite the top surface and one or more side surfaces between the top and bottom surfaces;

mating an upper mold portion with the lower mold portion, the upper mold portion having an upper inner cavity, including an upper inner surface which is coated with a release film, and the bottom surface of the chip butts against the upper inner surface, the lower mold portion having a lower inner surface, and the upper and bottom inner cavities forming a mold inner cavity enclosing the incomplete flip chip package, and forming a runner that has an upper portion that includes the release film coated on the upper inner surface of the upper mold portion, and a lower inner surface that includes the lower inner surface of the lower mold [between the upper and lower mold portions];

injecting a predetermined amount of a liquid resin into the mold inner cavity through the runner, the liquid resin encapsulating substantially all or the one or more side surfaces and substantially all of the upper surface, the liquid resin further filling a gap between the top surface of the chip and an adjacent portion of the upper

surface of the substrate, encapsulating the reflowed solder bumps;  
and

curing the liquid resin by maintaining the mold at an elevated temperature  
for a predetermined period of time, the elevated temperature being  
equal to or greater than the cure temperature of the filled liquid  
resin for the predetermined period of time.

35. (Cancelled)

36. (Cancelled)